

Claims

I claim:

- 1 1. A method for detecting components of a non-stationary signal,
2 comprising:
3 acquiring the non-stationary signal;
4 constructing a non-negative matrix of the non-stationary signal, the
5 matrix including columns representing features of the non-stationary signal
6 at different instances in time; and
7 factoring the non-negative matrix into characteristic profiles and
8 temporal profiles.
- 1 2. The method of claim 1 in which the non-negative matrix has M
2 temporally ordered columns where M is a total number of histogram bins
3 into which the features are accumulated, such that $M = (L/2+1)$, for a signal
4 of length L .
- 1 4. The method of claim 3 in which the non-negative matrix is expressed as
2 $R^{M \times N}$, the temporal profiles are expressed as $R^{M \times R}$ and the characteristic
3 profiles are expressed as $R^{R \times N}$, where $R \leq M$, where R is a number of
4 components to be detected.
- 1 5. The method of claim 1 in which the non-stationary signal is an acoustic
2 signal.

- 1 6. The method of claim 1 in which the non-stationary signal is a 2D visual
2 signal.
- 1 7. The method of claim 1 in which the non-stationary signal is a 3D-scanned
2 signal and frames of the signal represent volumes.
- 1 8. The method of claim 4 in which the number of components R is known.
- 1 9. The method of claim 4 in which the number of components R is an
2 estimate number of components.